REMARKS

It is respectfully requested that this application be reconsidered in view of the above amendments and the following remarks and that all of the claims remaining be allowed.

Rejections Under 35 U.S.C. § 112, Written Description (Pages 3-4 of the Office Action)

The rejection of claims 23, 24 and 36-41 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement, is respectfully traversed for the reasons set forth below. The Office Action asserts that the claims allegedly contain subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Possession may be shown in a variety of ways including description of an actual reduction to practice, or by showing that the invention was "ready for patenting" such as by the disclosure of drawings or structural chemical formulas that show that the invention was complete, or by describing distinguishing identifying characteristics sufficient to show that the applicant was in possession of the claimed invention. The Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, Paragraph 1, "Written Description" Requirement, Federal Register 66(4):1099, 1104 (2001).

Claim 23 is directed to a method for preventing, treating or ameliorating an HIV infection comprising administering to a subject in need thereof an effective amount of a composition comprising a fully human antibody, or an antigen-binding fragment thereof, that recognizes at least two strains of HIV, wherein the antibody or fragment blocks HIV binding. Claims 24 and 36-41 depend from claim 23. The Office Action states that the claims do not identify any structural or functional characteristics of the claimed fully human antibody or fragment except that it recognizes the co-receptor binding region of gp120 or SEQ ID NO:3. The Office Action also states that the specification does not reasonably convey possession of these "undefined antibodies or fragments."

Applicants respectfully disagree. The structure of antibodies is well known in the art, and it is not necessary to describe the structure of the antibodies in the specification or claims as long as the antigen is known. Example 16 (page 59-60) of the Written Description Training Materials (http://www.uspto.gov/web/menu/written.pdf) makes this point clear. In Example 16, the specification teaches that antigen X has been isolated and is useful for detection of HIV infections. The specification provides a clear protocol by which antigen X was isolated. The specification does not teach in an example antibodies which specifically bind to antigen X, but contemplates that these antibodies can be used in immunoassays to detect HIV. The claim at issue in Example 16 is directed to an isolated antibody capable of binding to antigen X.

Pursuant to the Written Description Training Materials, the disclosure in Example 16 meets the written description requirement. As stated in the Written Description Training Materials:

> The general knowledge in the art is such that antibodies are structurally well characterized. It is well known that all mammals produce antibodies and they exist in five isotypes, IgM, IgG, IgD,IgA and IgE. Antibodies contain an effector portion which is the constant region and a variable region that contains the antigen binding sites in the form of complementarity determining regions and the framework regions. The sequences of constant regions as well as the variable regions subgroups(framework regions) from a variety of species are known and published in the art. It is also well known that antibodies can be made against virtually any protein.

The Written Description Training Materials thus decides that, considering the routine art-recognized method of making antibodies to fully characterized antigens, the well defined structural characteristics for the five classes of antibody, the functional characteristics of antibody binding, and the fact that the antibody technology is well developed and mature, one of skill in the art would have recognized that the spectrum of antibodies which bind to antigen X were implicitly disclosed as a result of the isolation of antigen X.

Similarly, the instant case also complies with the written description requirement. The claimed methods recite fully human antibodies, or fragments thereof, that recognize at least two HIV strains. HIV strains are known in the art, and methods of isolating HIV strains are also well established. The claimed invention further require the functional characteristics that the

antibodies or fragments should block HIV infection, rather than being any antibody that recognizes at least two HIV strains. Therefore, the present application provides more distinguishing identifying characteristics than Example 16 of the Written Description Training Materials, which broadly claims an isolated antibody capable of binding to antigen X and is deemed to meet the written description requirement.

The dependent claims provide even more distinguishing identifying characteristics. For example, claim 36 requires the antibody or fragment to recognize the gp120 of at least two strains of HIV, claim 37 requires the antibody or fragment to recognize the co-receptor binding region of gp120, claim 28 requires the antibody or fragment to recognize at least two sequences selected from the group consisting of SEQ ID NOs:2-17, and claims 39 and 40 require the antibody to be IgG and IgG1, respectively. Clearly, the written description requirement is satisfied.

Accordingly, withdrawal of this rejection is respectfully requested.

Rejections Under 35 U.S.C. § 112, Enablement (Pages 4-6 of the Office Action)

The rejection of claims 23, 24 and 36-41 under 35 U.S.C. § 112, first paragraph, as allegedly not enabled, is respectfully traversed for the reasons set forth below.

The test of enablement is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. MPEP § 2164.01; *United States v. Telectronics, Inc.*, 8 USPQ2d 1217, 1223 (Fed. Cir. 1988).

Claim 23 is directed to a method for preventing, treating or ameliorating an HIV infection comprising administering to a subject in need thereof an effective amount of a composition comprising a fully human antibody, or an antigen-binding fragment thereof, that recognizes at least two strains of HIV, wherein the antibody or fragment blocks HIV binding. The Office Action states that due to the highly unpredictable and complex nature of HIV infection, results

from in vitro studies and in vivo studies in animal models and humans do not always agree with each other. The Office Action discusses escape variants of HIV (Wei, 2003[1]), stating that HIV can evade antibodies by "making strategic alterations in the sequence and structure of its surface gp120," and as a result, "viral rebound is observed in treatment subjects within weeks after the administration, indicating ineffectiveness in vivo (Trkola, 2005[2])." The Office Action thus asserts that the present application provides in vitro data without addressing the problem of HIV mutation anywhere, and concludes that undue experimentation would allegedly be required for the claimed in vivo use.

Applicants respectfully disagree. As an initial matter, it should be pointed out that the claim element "treating or ameliorating an HIV infection" means reducing or eliminating the symptoms of HIV infection or slowing down the progress of HIV infection (page 12, [0070] of the specification). Similarly, "preventing" HIV infection means taking a measure so that HIV infection does not develop, or develops to a lesser extent (page 13, [0071] of the specification). Neither term requires the complete abolishment or absence of HIV infection. Based on these definitions, the Wei, 2003 and Trkola, 2005 references both describe effective treatment or amelioration of HIV infection using antibodies. In Wei, 2003, neutralizing antibodies eliminated neutralization-sensitive viruses. Although neutralization-resistant viruses then expanded, the course of HIV infection was necessarily delayed, and symptoms of HIV infection must have been reduced when the neutralization-sensitive viruses were eliminated. In Trkola, 2005, the antibodies delayed viral rebound in many of the patients, again supporting the notion that antibodies can be used in vivo to treat or ameliorate HIV infection with a high success rate.

Furthermore, in contrast to the assertion in the Office Action, the present application in fact addresses HIV mutation as one of the primary problems the present invention will overcome (page 6, [0041]):

> A further problem in preparing therapeutic antibodies targeting gp120 is that the primary structure, i.e., amino acid sequence, of gp120 is highly variable among different HIV-1

[1] Wei et al., "Antibody neutralization and escape by HIV-1," Nature 422:307, 2003.
[2] Trkola et al., "Delay of HIV-1 rebound after cessation of antiretroviral therapy through passive transfer of human neutralizing antibodies," Nature Medicine 11(6):615, 2005.

strains (Kuhmann et al., 2000; Hahn et al., 1985; Modrow et al., 1987; Thomson et al., 2002). In fact, even sequential isolates from a single patient show variation (Hahn et al., 1986). Therefore, fully human antibodies that are capable of recognizing conformational epitopes on gp120, which can be used for therapeutic and/or preventive purposes against multiple HIV strains, are desirable. The ideal antibodies would recognize the co-receptor binding region of gp120, particularly conformational epitopes.

Claim 23 requires the use of a fully human antibody, or an antigen-binding fragment thereof, that recognizes at least two strains of HIV, wherein the antibody or fragment blocks HIV binding. Although HIV antigens vary, a sequence or conformation important for its function, particularly its function in viral binding, must be conserved. Therefore, an antibody that recognizes at least two strains of HIV and blocks HIV binding likely binds an important epitope that does not vary. The dependent claims further require that the antibody binds to gp120, the co-receptor binding region of gp120, or specific co-receptor binding regions of gp120, from at least two strains. The present application provides ample guidance as to how to prepare such antibodies (see, e.g., pages 14-15, [0078]). Consequently, the in vivo HIV mutation problem can be overcome by the present invention. No undue experimentation is required.

If the Examiner is concerned about inoperative species, the claimed invention requires an effective amount of the antibody-containing composition for preventing, treating or ameliorating HIV invention. Accordingly, the claims do not encompass inoperative species.

Accordingly, withdrawal of this rejection is respectfully requested.

Conclusions

For the reasons set forth above, Applicants submit that the claims of this application are patentable. Reconsideration and withdrawal of the Examiner's objections and rejections are hereby requested. Allowance of the claims remaining in this application is earnestly solicited.

In the event that a telephone conversation could expedite the prosecution of this application, the Examiner is requested to call the undersigned at (650) 839-5044.

Enclosed is a $510 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: May 8, 2006

Ping F. Hwung
Reg. No. 44,164

Fish & Richardson P.C.
500 Arguello Street, Suite 500
Redwood City, California 94063
Telephone: (650) 839-5070
Facsimile: (650) 839-5071

50312614.doc